LHC RF Meeting
7th May 2004

Present: Luca Arnaudon, Olivier Brunner, Andy Butterworth, Edmond Ciapala, Wolfgang Hofle, Pierre Maesen, Joachim Tückmantel, Daniel Valuch.

Note: New version of minutes 30th April 2004 (ADT corrections) replaces original.

1) SA2 - LHC Klystron Installation (Olivier/Luca)

- RF was switched on on the 30th April. RF detectors and klystron DCCTs have now been calibrated. A total power of 320 kW (now precisely calibrated) is now available, more might be obtainable, but only in the presence of an RF power specialist. The coupler conditioning has restarted, initially only very low power could be sustained, but hopefully conditioning to the previous level (200 kW cw) will be rapid.

2) ACS Couplers (info from Eric)

- The third coupler (MC109) for module 1 will be baked in the coming week (Week 20). The remaining second polarization ceramic is expected for the end of next week, allowing assembly, bake out and test of coupler MC110 to take place in week 21.

3) SM18 (Pierre)

- Module 1 has been moved out of the bunker. The space allowed for maneuvering according to the proposed new layout in SM18 was checked against corresponding floor markings and is only just sufficient. The doors for both bunkers have now been modified. Work on modifying the waveguides in Bunker 1 is progressing well and should be finished by the end of the week. Module 2 will therefore go into the bunker for thermal cycling early next week. Preparations for the installation of controls for the SC modules is going well and is expected to be finished by mid June. Testing of this equipment would also be a reason (in addition to testing of LLRF modules) to re-install module 3 while waiting for module 1.

4) Klystron and circulator acceptance (Olivier)

- Klystron 9 has been returned to the manufacturer. Klystron 8 is being tested. Two circulator/loads will also be tested. No further problems have been seen with the loads.
- Tests have shown that increasing the distance from klystron to circulator by $\lambda/8$ improves klystron efficiency over the full range of circulator output reflected phases. This can also be achieved by changing the positioning of the klystron output matching post and is being discussed with the manufacturer.

5) ADT (Wolfgang)

- **Anode supplies:** The supplier has produced figures on the amount of harmonic ripple introduced into the mains. They consider that our total number of 8 supplies will have to be driven in pairs via phase shifting transformers to reduce mains distortion to 5 %. CERN requirements on this will be taken up with Juan Gomez (TS-EL). **(Action: Wolfgang)**
- **Controls in SR4:** The controls layout for the power converters in SR4 should be defined.
- **Drive Amplifiers:** The controls interface must be checked in the coming week. **(Action: Luca and Frode)**
- **Grid Supplies:** The design will be discussed with Joel Lahaye (AB-PO).
- **Feedthroughs:** The supplier will be visited early next week.
- **Flanges:** Welding samples have been received and will be studied by CERN specialists.

6) Market Surveys

- **Flexwell cables:** As last week, but it is necessary to have a final layout for SR4 to complete the work. Exact rack requirements have to be gathered first and the size of the control room agreed. **(Action: J-C Perrier, with Volker, Philippe and Wolfgang)**

7) Commissioning (Olivier)

- It was agreed that the important activity of testing equipment and infrastructure as far as possible before powering should be introduced into the commissioning planning. Detailed input on commissioning of LLRF has now been given. A resulting new full planning is in preparation.

(Action: Olivier)

- **ADT:** More detailed input is still needed. **(Action: Wolfgang)**

8) Controls

- A presentation on the status of controls for RF was given at the last AB-CO technical committee of 6th May, the emphasis being on the handling of PLC based systems. The best strategy for handling of related 'operational' and 'expert' software, whether there should be a distinction, as well as what standard components to use is still not clear for LHC RF. The use of Windows based software servers, e.g. OPC, in the machine is an issue. We will now make our proposal to CO group, based in the information gained.

(Action: Ed, Andy, Luca, Frode)

9) Equipment naming (Ed)

- AB-OP have provided input on 'operations' names, agreeing with our own proposals. Nevertheless the actual official naming is back in question, i.e. the use of the first letter to denote the group responsible and the definition of 'assemblies'. To be followed up **again** to reach final conclusion. **(Action: Ed, Volker)**

Next Meeting: Friday 14th May 2004 at 08:45 in the JB Adams Room 864-2-B14.

E. Ciapala, 13rd May 2004.